

#6

DOCKET NO.: CC-3397



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Brifcani et al.

Serial No.: 10/024,862

Group Art Unit: 3727

Filing Date: December 18, 2001

Examiner: Not yet assigned

For: CAN END AND METHOD FOR FIXING THE SAME TO A CAN BODY

EXPRESS MAIL LABEL NO: EL568092851US

DATE OF DEPOSIT: April 30, 2002

Box Missing Parts
Assistant Commissioner for Patents
Washington DC 20231

Sir:

PRELIMINARY AMENDMENT TRANSMITTAL LETTER

Transmitted herewith for filing in the above-identified patent application is:

- ☒ A Supplemental Preliminary Amendment.
- ☐ An Amendment Responsive to the Office Action Dated _____.
- ☐ An Amendment Supplemental to the Paper filed _____.
- ☐ Other: _____.

- ☐ Applicant(s) has previously claimed small entity status under 37 CFR §1.27.

- ☐ Applicant(s) by its/their undersigned attorney, claims small entity status under 37 CFR §1.27 as:
 - ☐ an Independent Inventor
 - ☐ a Small Business Concern

☐ a Nonprofit Organization

- ☐ This application is no longer entitled to small entity status. It is requested that this be noted in the files of the Patent and Trademark Office.
- ☐ Substitute Pages _____ of the Specification are enclosed.
- ☐ An Abstract is enclosed.
- ☐ _____ Sheets of Proposed Corrected Drawings are enclosed.
- ☐ A Certified Copy of each of the following applications: _____
_____ is enclosed.
- ☐ An Associate Power of Attorney is enclosed.
- ☐ Information Disclosure Statement.
- ☐ Attached Form 1449.
- ☐ A copy of each reference as listed on the attached Form PTO-1449 is enclosed herewith.
- ☐ Appended Material as follows: _____ .
- ☐ Other Material as follows: _____ .

FEE CALCULATION

☐ No Additional Fee is Due.

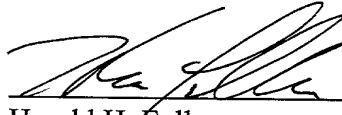
				SMALL ENTITY		NOT SMALL ENTITY	
	REMAINING AFTER AMENDMENT	HIGHEST PAID FOR	EXTRA	RATE	FEE	RATE	FEE
TOTAL CLAIMS	41	20 (20 MINIMUM)	21	\$9 EACH	\$0	\$18 EACH	\$ 378
INDEP. CLAIMS	5	1 (3 MINIMUM)	1	\$42 EACH	\$0	\$84 EACH	\$84
FIRST PRESENTATION OF MULTIPLE DEPENDENT				\$140	\$0	\$280	\$0
<input type="checkbox"/> ONE MONTH EXTENSION OF TIME				\$55	\$0	\$110	\$0
<input type="checkbox"/> TWO MONTH EXTENSION OF TIME				\$200	\$0	\$400	\$0
<input type="checkbox"/> THREE MONTH EXTENSION OF TIME				\$460	\$0	\$920	\$0
<input type="checkbox"/> FOUR MONTH EXTENSION OF TIME				\$720	\$0	\$1440	\$0
<input type="checkbox"/> FIVE MONTH EXTENSION OF TIME				\$980	\$0	\$1960	\$0
<input type="checkbox"/> LESS ANY EXTENSION FEE ALREADY PAID				minus	(\$ 0)	minus	(\$ 0)
<input type="checkbox"/> TERMINAL DISCLAIMER				\$55	\$0	\$110	\$0
<input type="checkbox"/> OTHER FEE OR SURCHARGE AS FOLLOWS:					0		0
TOTAL FEE DUE					\$0.00		\$462.00

- ☒ A Check is Enclosed in the Foregoing Amount Due.
- ☐ Petition is hereby made under 37 C.F.R. 1.136(a) to extend the time for response to the Office Action of @@ to and through @@ comprising an extension of the shortened statutory period of @@ month(s).
- ☒ The Commissioner is hereby requested to grant an extension of time for the appropriate length of time, should one be necessary, in connection with this filing or any future filing submitted to the U.S. Patent and Trademark Office in the above-identified application during the pendency of this application. The Commissioner is further authorized to charge any fees related to any such extension of time to deposit account 23-3050. This sheet is provided in duplicate.

- ☒ The Commissioner is authorized to charge payment of the following fees and to refund any overpayment associated with this communication or during the pendency of this application to deposit account 23-3050. This sheet is provided in duplicate.
- ☐ The Foregoing Amount Due for Filing this Paper.
- ☒ Any additional filing fees required, including fees for the presentation of extra claims under 37 C.F.R. 1.16.
- ☒ Any additional patent application processing fees under 37 C.F.R. 1.17 or 1.20(d).

SHOULD ANY DEFICIENCIES APPEAR with respect to this application, including deficiencies in payment of fees, missing parts of the application or otherwise, the United States Patent and Trademark Office is respectfully requested to promptly notify the undersigned.

Date: April 30, 2002


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In re application of:

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For: **CAN END AND METHOD FOR FIXING THE SAME TO A CAN BODY**

EXPRESS MAIL LABEL NO: **EL568092851US**
DATE OF DEPOSIT: **April 30, 2002**

Assistant Commissioner
for Patents
Washington, D.C. 20231

Dear Sir:

SUPPLEMENTAL PRELIMINARY AMENDMENT

Please make the amendments to the above-identified application as follows:

In the Specification:

At Page 1, after the title, replace the first paragraph of continuing information as follows:

--Cross-Reference to Related Applications

This is a continuation of United States Patent Application Number 09/650,664, filed August 30, 2000, which is a continuation of United States Patent Application Number 09/552,668, filed April 19, 2000, now abandoned, which is a continuation of United States Patent Application Number 08/945,698, filed November 21, 1997, which issued May 23, 2000 as U.S. Patent 6,065,634, which is the U.S. National Phase of PCT/GB96/00709, filed March 25, 1996, which claims priority to UK 9510515.1, filed May 24, 1995.--

Amend Table 6, which appears on page 13 of the substitute specification and page 17 of the as-filed specification, as follows:

TABLE 6

END SIZE Bead OD:ID	OVERALL DIA mm	PANEL DIA d ₁ mm	RATIO OVERALL DIA: PANEL DIA	CHUCK WALL ANGLE C°	CHUCK WALL LENGTH L mm	RE- ENFORCING RAD r ₃ mm	INNER WALL HEIGHT h ₃ mm	OUTER WALL HEIGHT h ₄ mm	PREDICTED CUT EDGE Ø (*DENOTES ACTUAL)	ACTUAL THICKNESS TO CONTAIN PSI
206-204	64.39 (2.535")	49.49 (1.9485")	1.3010	33.07°	4.22 (0.166")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	75.230 (2.9618")	0.255
206-202	64.39 (2.535")	47.33 (1.8634")	1.3604	42.69°	4.95 (0.195")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	74.272 (2.9241")*	0.255
206-200	64.39 (2.535")	45.07 (1.7744")	1.4287	50.053°	5.82 (0.229")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	73.713 (2.9021")	0.255
204-202	62.18 (2.448")	47.33 (1.8634")	1.3137	29.78°	3.96 (0.156")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	73.767 (2.9042")	0.24
204-200	62.18 (2.448")	45.07 (1.7744")	1.3796	40.786°	4.70 (0.185")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	72.911 (2.8705")	0.24
202-200	71.98 (2.834")	45.07 (1.7744")	1.597	30.266°	4.09 (0.161")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	71.984 (2.834")	0.225
206 std	64.69 (2.547")	51.92 (2.044")	1.2461	15.488°	4.39 (0.173")	0.56 (0.022")	2.03 (0.080")	-	76.454 (3.010")*	0.28
KRASKA ESTIMATE	64.39 (eg 2.535")	-	-	15°	2.54 (0.100")	0.81 (0.032")	1.65 (0.065")	2.29 (0.090")	78.080 (3.074")	0.292 (0.0115")
All experiments modelled on a notional aluminium alloy of yield strength 310 mpa 0.25 mm thick. The standard was also 310 mpa BUT 0.275 mm thick.										

In the Claims:

Cancel claims 1 through 10, and add claims 11 through 51, as follows:

11. (New) A method of forming a double seam between a can body and a can end, said method comprising the steps of:

- a) providing a can end having a circumferentially extending peripheral curl and a wall extending circumferentially and radially inward from said curl and an annular reinforcing bead extending radially inward from said wall, said reinforcing bead having an interior surface, said peripheral curl comprising a seaming panel and a radiused portion extending from said seaming panel to said wall, said wall inclined between about 20° and about 60° with respect to an axial centerline of said can end;
- b) placing said curl of said can end into contact with a circumferentially extending flange of a can body;
- c) providing a rotatable chuck having first and second circumferentially extending walls, said first and second walls forming a juncture therebetween; bringing said chuck into engagement with said can end so that said juncture of said first and second walls of said chuck contacts said inclined wall of said can end;
- d) rotating said chuck;
- e) performing a first seaming operation by placing a first seaming roll into contact with said can end curl while rotating said can end so as to partially deform said curl and said can body flange into a partial seam, said rotation of said can end during said first seaming operation driven by said rotating chuck through driving contact between said juncture of said first and second walls of said chuck and said inclined wall of said can end without driving contact between said chuck and said can end bead interior surface;
- f) performing a second seaming operation by placing a second seaming roll into contact with said partially deformed can end curl so as to further deform said curl and said can body flange so as to further form said seam.

12. (New) The method according to claim 11, wherein said first and second seaming operations reform said can end inclined wall by bending a first portion of said inclined wall upward by an angle of at least about 16°.

13. (New) The method according to claim 11, wherein as a result of said first and second seaming operations said can end inclined wall is reformed so that a first portion of said wall is oriented substantially cylindrically.

14. (New) The method according to claim 11, wherein prior to performing said first seaming operation said wall of said can end is inclined between about 30° and about 50° with respect to said axial centerline of said can end.

15. (New) The method according to claim 14, wherein as a result of said first and second seaming operations said can end inclined wall is reformed so that a first portion of said wall is oriented substantially cylindrically.

16. (New) The method according to claim 14, wherein said first and second seaming operations reform said can end inclined wall by bending a first portion of said inclined wall upward by an angle of at least about 26°.

17. (New) The method according to claim 11, wherein prior to performing said first seaming operation said wall of said can end is inclined between about 40° and about 45° with respect to an axial centerline of said can end.

18. (New) The method according to claim 17, wherein as a result of said first and second seaming operations said can end inclined wall is reformed so that a first portion of said wall is oriented substantially cylindrically.

19. (New) The method according to claim 17, wherein said first and second seaming operations reform said can end inclined wall by bending a first portion of said inclined wall upward by an angle of at least about 36°.

20. (New) The method according to claim 11, wherein said first circumferentially extending wall of said chuck is oriented so as to be substantially cylindrical.

21. (New) The method according to claim 20, wherein said substantially cylindrical first wall of said chuck is oriented so as to be inclined with respect to an axial centerline of said chuck by no more than about 4°.

22. (New) The method according to claim 11, wherein the distance from the lowermost point on said annular bead to the uppermost point on said curl defines a height of said can end, and wherein as a result of said first and second seaming operations said can end inclined wall is reformed so that a first portion of said wall is bent upwardly so as to substantially increase said height of said can end.

23. (New) The method according to claim 11, wherein said chuck second wall is inclined with respect to an axial centerline of said chuck that substantially matches said inclination of said can end wall, and wherein said rotation of said can end during said first seaming operation is aided by driving contact between said second wall of said chuck and said inclined wall of said can end.

24. (New) A method of forming a double seam between a can body and a can end intended for use in packaging a carbonated beverage, said method comprising the steps of:

a) providing a can end having a circumferentially extending peripheral curl and a wall extending circumferentially and radially inward from said curl and an annular reinforcing bead extending radially inward from said wall, said peripheral curl comprising a seaming panel and a radiused portion extending from the seaming panel to said wall, said wall inclined between about 20° and about 60° with respect to an axial centerline of said can end;

b) placing said curl of said can end into contact with a circumferentially extending flange of a can body;

c) providing a rotatable chuck having first and second circumferentially extending walls, said first wall being substantially cylindrical;

d) bringing said chuck into engagement with said can end;

e) performing a seaming operation by placing one or more seaming rolls into contact with said curl of said can end while said can end rotates so as to deform said curl and said can body flange into a seam, said seaming operation deforming said can end inclined wall into distinct first and second portions, said first wall portion being reformed

so as to be substantially cylindrical, said second wall portion remaining inclined between about 20° and about 60° with respect to said axial centerline.

25. (New) The method according to claim 24, wherein during said seaming operation said can end inclined wall first portion is reformed by bending said first portion upward by an angle of at least about 16°.

26. (New) The method according to claim 24, wherein said wall of said can end is inclined between about 30° and about 50° with respect to an axial centerline of said can end.

27. (New) The method according to claim 26, wherein during said seaming operation said can end inclined wall first portion is reformed by bending said first portion upward by an angle of at least about 26°.

28. (New) The method according to claim 24, wherein said wall of said can end is inclined between about 40° and about 45° with respect to an axial centerline of said can end.

29. (New) The method according to claim 28, wherein during said seaming operation said can end inclined wall first portion is reformed by bending said first portion upward by an angle of at least about 36°.

30. (New) The method according to claim 24, wherein said substantially cylindrical first wall of said chuck is oriented so as to be inclined with respect to an axial centerline of said chuck by no more than about 4°.

31. (New) The method according to claim 24, wherein the distance from the lowermost point on said annular bead to the uppermost point on said curl defines a height of said can end, and wherein as a result of said seaming operation said can end inclined wall is reformed so that said first portion of said wall is bent upwardly into said substantially cylindrical orientation so as to substantially increase said height of said can end.

32. (New) The method according to claim 24, wherein
- f) said annular bead has an interior surface thereof;
 - g) said first and second walls of said chuck form a juncture therebetween;
 - h) said seaming operation comprises (i) performing a first seaming operation by placing a first seaming roll into contact with said can end curl while said can end is rotated so as to partially deform said curl and said can body flange into a partial seam, and (ii) performing a second seaming operation by placing a second seaming roll into contact with said partially deformed can end curl so as to further deform said curl and said can body flange so as to further form said seam;
 - i) said rotation of said can end during said first seaming operation is accomplished by imparting driving contact between said juncture of said first and second walls of said chuck and said inclined wall of said can end but without imparting driving contact between said chuck and said can end bead interior surface.
33. (New) The method according to claim 24, further comprising the step of filling the can body with a carbonated beverage prior to performing said seaming operation.
34. (New) A method of forming a double seam between a can body and a can end, said method comprising the steps of:
- a) providing a can end having a circumferentially extending inclined wall and a peripheral curl extending circumferentially and radially outward from said inclined wall, said peripheral curl comprising a seaming panel and a radiused portion extending from the seaming panel to said inclined wall, said wall inclined between about 30° and about 60° with respect to an axial centerline of said can end;
 - b) placing said curl of said can end into contact with a circumferentially extending flange of a can body;
 - c) providing a rotatable chuck having first and second circumferentially extending walls, said first wall being oriented at an angle within the range of +4° to -4° with respect to an axial centerline of said chuck;
 - d) bringing said chuck into engagement with said can end;
 - e) performing a seaming operation by placing one or more seaming rolls into contact with said curl of said can end so as to deform said curl and said can body flange into a seam, a first portion of said inclined can end wall being pressed against said chuck

first wall, whereby said first portion of said inclined can end wall is bent upward through an angle of at least about 16° so as to reform said can end wall into distinct first and second portions, said second wall portion remaining inclined between about 20° and about 60° with respect to said axial centerline.

35. (New) The method according to claim 34, wherein said wall of said can end is inclined between about 30° and about 50° with respect to said axial centerline of said can end.

36. (New) The method according to claim 35, wherein during said seaming operation said can end inclined wall first portion is reformed by bending said first portion upward by an angle of at least about 26° .

37. (New) The method according to claim 34, wherein said wall of said can end is inclined between about 40° and about 45° with respect to said axial centerline of said can end.

38. (New) The method according to claim 37, wherein during said seaming operation said can end inclined wall first portion is reformed by bending said first portion upward by an angle of at least about 36° .

39. (New) The method according to claim 34, wherein the distance from the lowermost point on said annular bead to the uppermost point on said curl defines a height of said can end, and wherein said upward bending of said first portion of can end inclined wall during said seaming operation substantially increase said height of said can end.

40. (New) The method according to claim 34, wherein

- f) said can end comprises an annular reinforcing bead extending radially inward from said inclined wall, said annular bead having an interior surface thereof;
- g) said first and second walls of said chuck form a juncture therebetween;
- h) said seaming operation comprises (i) performing a first seaming operation by placing a first seaming roll into contact with said can end curl while said can end is rotated so as to partially deform said curl and said can body flange into a partial seam, and (ii) performing a second seaming operation by placing a second seaming roll into

contact with said partially deformed can end curl so as to further deform said curl and said can body flange so as to further form said seam;

i) said rotation of said can end during said first seaming operation is accomplished by imparting driving contact between said juncture of said first and second walls of said chuck and said inclined wall of said can end but without imparting driving contact between said chuck and said can end bead interior surface.

41. (New) The method according to claim 34, further comprising the step of filling the can body with a carbonated beverage prior to performing said seaming operation.

42. (New) An apparatus for seaming a peripheral curl of a can end onto a flange of a can body, said can end having a wall extending radially inward from said cover hook and inclined between about 20° and about 60° with respect to a central axis of said can end, comprising:

a) a chuck adapted to hold said can end on said can body, said chuck comprising upper and lower circumferentially extending walls forming a juncture therebetween, said lower wall inclined between about 20° and about 60° with respect to a central axis of said chuck, said upper wall being substantially cylindrical; and

b) at least one seaming roll adapted to urge an upper portion of said inclined wall of said can end against said upper wall of said chuck so as to deform said peripheral curl and said flange into a seam joining said can end to said can body.

43. (New) The apparatus according to claim 42, wherein said substantially cylindrical wall is inclined with respect to said central axis by not more than about 4°.

44. (New) The apparatus according to claim 42, wherein said lower wall of said chuck is inclined between about 30° and about 50° with respect to said central axis of said chuck.

45. (New) The apparatus according to claim 44, wherein said lower wall of said chuck is inclined between about 40° to about 45° with respect to said central axis of said chuck.

46. (New) An apparatus for seaming a can end onto a flange of a can body, said can end having a circumferentially extending peripheral curl and a wall extending circumferentially and radially inward from said curl and an annular reinforcing bead extending radially inward from said wall, said reinforcing bead having an interior surface, said peripheral curl comprising a seaming panel and a radiused portion extending from said seaming panel to said wall, said wall inclined between about 20° and about 60° with respect to an axial centerline of said can end, comprising:

a) a chuck for holding said can end on said can body, said chuck comprising (i) upper and lower circumferentially extending walls forming a juncture therebetween, said lower wall inclined between about 20° and about 60° with respect to a central axis of said chuck, said upper wall being substantially cylindrical, and (ii) a downwardly extending annular bead, said chuck annular bead sized and located so as not to contact said inner interior surface of said chuck annular reinforcing bead when said chuck holds said can end on said can body; and

b) at least one seaming roll adapted to urge an upper portion of said inclined wall of said can end against said upper wall of said chuck so as to deform said peripheral curl and said flange into a seam joining said can end to said can body.

47. (New) The apparatus according to claim 46, wherein said substantially cylindrical wall is inclined with respect to said central axis by not more than about 4°.

48. (New) The apparatus according to claim 46, wherein said lower wall of said chuck is inclined between about 30° and about 50° with respect to said central axis of said chuck.

49. (New) The apparatus according to claim 48, wherein said lower wall of said chuck is inclined between about 40° to about 45° with respect to said central axis of said chuck.

50. (New) The apparatus according to claim 46, wherein said lower wall of said chuck is adapted to drive rotation of said can end and said can body while said chuck holds said can end onto said can body.

51 (New) The apparatus according to claim 46, wherein said juncture between said upper and lower walls of said chuck is adapted to drive rotation of said can end and said can body while said chuck holds said can end onto said can body.

REMARKS

Claims 1-10 were pending in this application and have been cancelled. New claims 11-51 have been added. Therefore, upon entry of the foregoing amendment, claims 11-51 will be pending in this application.

A substitute specification is being filed concurrently with the present Supplemental Preliminary Amendment in response to a request therefore the Notice to File Missing Parts. The substitute specification has been prepared by retyping the as-filed specification. Although no new matter has been added in the retyping, the retyping has changed the pagination of the specification. Therefore, the citations provided below are with respect to the pagination of the substitute specification.

Further, Applicants submit an amendment to the Cross Reference to Related Applications to update information and to correct an inadvertent typographical error.

The current application claims priority, through several continuation applications, from Application Serial No. 08/945,698 (now U.S. Patent No. 6,065,634), claims 9 and 10 of which, as originally filed, recited a method of forming a double seam between a can body and a can end. Such method claims were subject to a restriction requirement and have not heretofore been examined. By the foregoing amendment, Applicants cancel all the original claims and submit new claims that recite methods of forming a double seam between a can body and a can end. Applicants also submit new claims directed to the apparatus for seaming a can end onto a can body.

Support for the claimed methods is generally provided, *inter alia*, at page 6, line 9 through page 7, line 13, of the instant application, as well as Figures 5 through 8. In particular, support for the limitations concerning the structure of the can end set out in element a) of independent claims 11, 24 and 34 can be found, *inter alia*, in Figure 4 and at page 5, lines 3-9, and page 5, lines 20-23. Support for the chuck wall angles recited in claims 14, 17, 26, 28, 35, and 37 can be found, *inter alia*, at page 5, lines 8-9 and in Table 6 on page 13. Support for the limitations found in elements b) and c) of independent claims 11, 24 and 34 can be found, *inter alia*, in Figure 5 and at page 6, lines 17-19. Support for elements d), e) and f) of independent claims 11, 24 and 34 may be found, *inter alia*, in Figures 6 and 7 and at page 6, line 21, to page 7, line 13. Support for the reference to bending a portion of the wall of the can end by an angle of at least about 16° recited in element e) of claim 34 and in claims 12 and 25, and by an angle of at least about 26° recited in claims 16, 27, and 36, and by an angle of at least about 36° recited in claims 19, 29, 38 and may be found, *inter alia*, in Figure 7 and at page 5, lines 8-9, and in Table 6 on page 13, and on page 6, lines 17-19 -- recognizing that when, as shown in Figure 7, a portion of the chuck wall 24 of the can end that is originally inclined at an angle of at least about 20° is pressed against the substantially cylindrical portion 33 of the chuck wall, which is oriented at an angle of $\pm 4^{\circ}$, such portion of the chuck wall 24 of the can end will be bent by an angle of at least about 16° (*i.e.*, $20^{\circ} - 4^{\circ} = 16^{\circ}$), and that when the chuck wall 24 of the can end is originally inclined at an angle of at least about 30° , it will be bent by an angle of at least about 26° , and when the chuck wall 24 of the can end is originally inclined at an angle of at least about 40° , it will be bent by an angle of at least about 36° . Support for claims 22, 31, and 39 may be found, *inter alia*, in Figures 4-7 and at page 7, lines 4-13. Support for claims 33 and 41 may be found, *inter alia*, at page 10, lines 4-5, and page 10, line 25, to page 11, line 2.

Support for apparatus claims 42-49 may be found, *inter alia*, at page 6, lines 12-27, and Figures 1 and 5-7.

Regarding the amendments to the table, the specification on page 12, lines 8-11, explains that Table 6 relates to "can ends when joined to containers containing pressurized beverage[s]." Thus, Table 6, in the columns referring to can ends, refers to can ends after seaming onto a can

body, as distinguished from an unseamed can end. The amendments to the table headings submitted herein merely correct typographical or inadvertent errors to make it clear that the data relates to seamed can ends, and thereby conform the table to other portions of the specification.

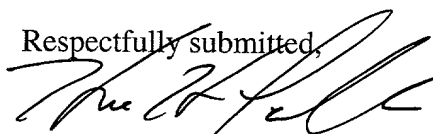
In this regard, the heading of the first column is amended to recite "OD:ID", rather than "O:D:ID" as inadvertently submitted in the as-filed table. The heading of the second column is amended to delete the reference to " d_2 ", as the "OVERALL DIA[METER]" of the seamed can end is the curled diameter, for which there is no reference letter or numeral. Similarly, the heading of the first column is also amended to delete the reference to " $d_2:d_1$ ", and the heading of the fourth column is amended to replace " $D_2:D_1$ " with "OVERALL DIA: PANEL DIA.". The heading of column 5 is changed from " B° " to " C° " to reflect that the column provides the angle relating to the "chuck wall 24" of the can end, as distinguished from the "surface 32" of the "chuck 30," as shown in Figures 4 and 5.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned "Version With Markings To Show Changes Made."

CONCLUSION

Applicants request favorable examination of the new claims. If the examiner determines that a telephone conference would further prosecution of the pending claims, he is invited to telephone the undersigned at his convenience.

Respectfully submitted,



Harold H. Fullmer

Registration No. 42,560

Date: *April 30, 2002*
WOODCOCK WASHBURN LLP
One Liberty Place - 46th Floor
Philadelphia, PA 19103
(215) 568-3100

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Claims 1 – 10 are canceled.

New claims 11-51 are added.

In the Specification:

The Cross-Reference to Related Applications, at Page 1, after the title, has been amended as follows:

Cross-Reference to Related Applications

This is a continuation of United States Patent Application Number 09/650,664, filed August 30, 2000, which is a continuation of United States Patent Application Number 09/552,668, filed April 19, 2000, now abandoned, which is a continuation of United States Patent Application Number 0[8]9/945,698, filed November 21, 1997, which issued May 23, 2000 as U.S. Patent 6,065,634, which is the U.S. National Phase of PCT/GB96/00709, filed March 25, 1996, which claims priority to UK 9510515.1, filed May 24, 1995 .

Table 6, which appears on page 13 of the substitute specification and page 17 of the as-filed specification:

TABLE 6

END SIZE Bead OD-ID [0:0:1D] [d ₂ :d ₁]	OVERALL DIA [d ₂] mm	PANEL DIA d ₁ mm	RATIO OVERALL DIA: PANEL DIA [D ₂ /D ₁]	CHUCK WALL ANGLE [B] _C ^o	CHUCK WALL LENGTH L mm	RE- ENFORCING RAD r ₃ mm	INNER WALL HEIGHT h ₃ mm	OUTER WALL HEIGHT h ₄ mm	PREDICTED CUT EDGE Ø (*DENOTES ACTUAL)	ACTUAL THICKNESS TO CONTAIN PSI
206-204	64.39 (2.535")	49.49 (1.9485")	1.3010	33.07°	4.22 (0.166")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	75.230 (2.9618")	0.255
206-202	64.39 (2.535")	47.33 (1.8634")	1.3604	42.69°	4.95 (0.195")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	74.272 (2.9241")*	0.255
206-200	64.39 (2.535")	45.07 (1.7744")	1.4287	50.053°	5.82 (0.229")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	73.713 (2.9021")	0.255
204-202	62.18 (2.448")	47.33 (1.8634")	1.3137	29.78°	3.96 (0.156")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	73.767 (2.9042")	0.24
204-200	62.18 (2.448")	45.07 (1.7744")	1.3796	40.786°	4.70 (0.185")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	72.911 (2.8705")	0.24
202-200	71.98 (2.834")	45.07 (1.7744")	1.597	30.266°	4.09 (0.161")	0.52 (0.0204")	2.34 (0.092")	1.78 (0.070")	71.984 (2.834")	0.225
206 std	64.69 (2.547")	51.92 (2.044")	1.2461	15.488°	4.39 (0.173")	0.56 (0.022")	2.03 (0.080")	-	76.454 (3.010")*	0.28
KRASKA ESTIMATE	64.39 (eg 2.535")	-	-	15°	2.54 (0.100")	0.81 (0.032")	1.65 (0.065")	2.29 (0.090")	78.080 (3.074")	0.292 (0.0115")
All experiments modelled on a notional aluminium alloy of yield strength 310 mpa 0.25 mm thick. The standard was also 310 mpa BUT 0.275 mm thick.										